

**ELECTRONIC COMMERCE/
ELECTRONIC DATA INTERCHANGE
VAN PROVIDER**

**COMMUNICATION
LOADING
TEST PLAN**

VERSION 1.0

(DRAFT)

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EXECUTIVE SUMMARY

Commercial Electronic Data Interchange (EDI) Value Added Network (VAN) Providers serve as the interface between Government Automated Information Systems and industry Trading Partners for the purpose of exchanging American National Standards Institute Accredited Standards Committee X12 EDI Transaction Sets.

The Joint Interoperability Test Command (JITC) will conduct an operational load test to ensure candidate VANs process Government EDI traffic loads according to operational guidelines specified in the VAN Licence Agreement (VLA), Enclosure 4, EDI Operations. See Table E-1. The JITC is conducting the test for the Defense Information Systems Agency Electronic Commerce/Electronic Data Interchange (EC/EDI) Operations (EDI OPS) Team.

Table E-1. VLA Operational Load Test Requirements Summary

VLA Encl. 4 PARA	REQUIREMENT DESCRIPTION
1.5	Transaction Acknowledgments
1.8	Back-Up/Recovery
1.9	99% Availability
1.9	Echo/Echo Reply
2.2.2	Government Access to One-to-All Transactions
2.2.3	Government Access to One-to-One Transactions
2.3	Minimum Transaction Accessibility

The JITC will use the Test - Electronic Commerce Processing Node (ECPN) located at the Defense Continuity of Operations and Test Facility, Slidell, LA, and a JITC Test - Trading Partner (TP) at Ft Huachuca, AZ, to stimulate the VAN with EDI traffic. The Test-ECPN and Test-TP will send and receive the test traffic to the VANs primary and alternate communication paths using operational networks for two 24 hour scenarios. The JITC will use the expected VAN responses compared to the actual VAN responses to verify test requirements. The test load initiated by the Test-ECPN will represent operational Government workloads.

The VAN will have five days to prepare for and complete this test. The VAN can not change the hardware or software configuration during this time. Upon completion of the second scenario, the JITC will harvest and reduce the data and provide the results to the EDI OPS Team.

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SECTION I - INTRODUCTION

I-1 PURPOSE. The operational load test ensures Value Added Networks (VANs) process Government Electronic Data Interchange (EDI) traffic loads according to operational guidelines specified in the VAN Licence Agreement (VLA), Enclosure 4, EDI Operations.

I-2 BACKGROUND

a. The Defense Information Systems Agency (DISA) Electronic Commerce/Electronic Data Interchange (EC/EDI) Operations Team tasked the Joint Interoperability Test Command (JITC) to establish a program to test mandatory and claimed optional features and services of VANs. The EDI OPS Team establishes the applicant VANs test scheduling priorities.

b. Figure 1 provides an overview of the EC Infrastructure (ECI). As depicted, Government Automated Information Systems (AISs), DoD and Federal Gateways, the DoD Electronic Commerce Processing Node's (ECPNs), and commercial EDI VANs are used to connect to Government Users and Industry Trading Partners (TPs). This enables the exchange of American National Standards Institute (ANSI) Accredited Standards Committee (ASC) X12 Data Interchanges.

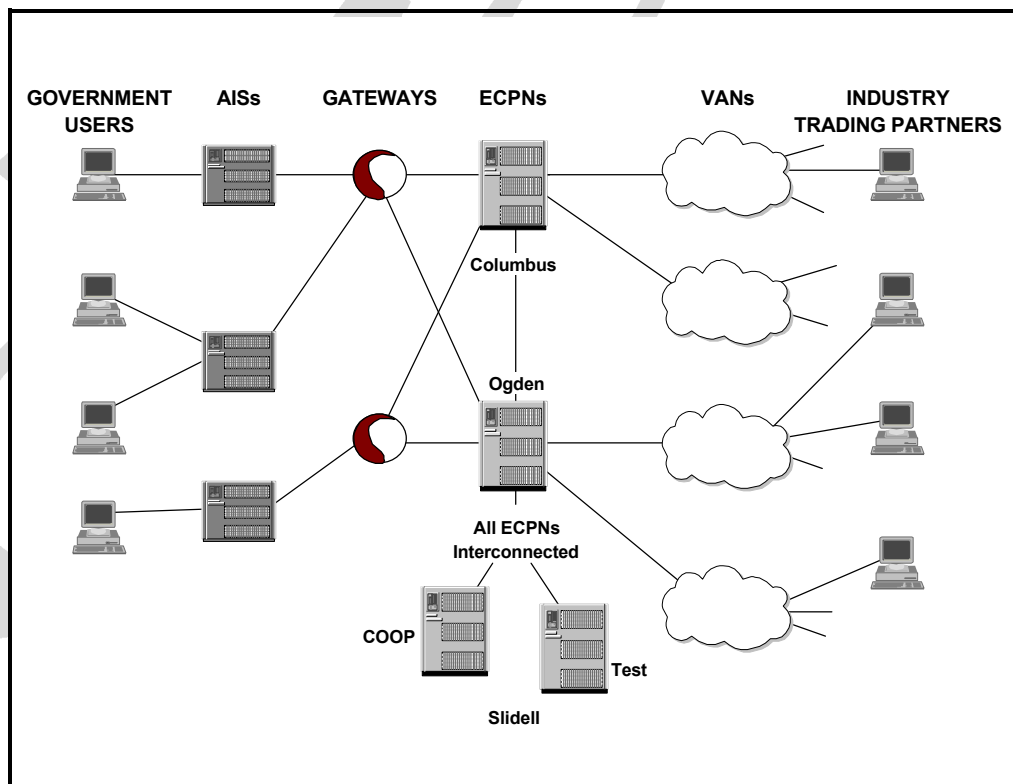


Figure 1. Electronic Commerce Components and Connectivity

I-3 OVERVIEW

a. Scope

(1) The requirements addressed during the operational load test are listed in Table 1. The corresponding paragraph of the VLA (Enclosure 4) are identified along with a brief description of the requirement.

Table 1. Operational Load Test Requirements

#	REQUIREMENT	VLA Encl. 4 PARA	DESCRIPTION
1	Transaction Acknowledgments	1.5	Initiate all one-to-all transaction acks (screen all one-to-all acks from TPs)
2	Back-Up/Recovery	1.8	10 days On-line/45 days archived
3	99% Availability	1.9	Normal maintenance hours availability
4	Echo/Echo Reply	1.9	Support Pings
5	Government Access to One-to-All Procurement Transactions	2.2.2	Make available to government all public transactions as the VAN would a TP
6	Government Access to One-to-One Procurement Transactions	2.2.3	Make available to government all one-to-one transactions as the VAN would a TP
7	Minimum Transaction Accessibility	2.3	One hour for Government one-to-one Two hour for Government one-to-all

(2) The JITC will stimulate the VAN and use the expected VAN responses to verify test requirements. The test network will consist of the Test ECPN located at the Defense Continuity of Operations and Test Facility, Slidell, LA, and a JITC Test TP and analyst workstation located at Fort Huachuca, AZ. The Test-ECPN and Test-TP will send and receive the test traffic using operational networks for two 24 hour periods. The first 24 hours will use the VANs primary communications path. The second 24 hours will use the VANs alternate communications path. The test load initiated by the Test-ECPN will represent operational Government workloads.

(3) The VAN will have five working days to prepare for and complete this test. The VAN can not change the hardware or software configuration during this time. If it becomes obvious that the VAN will not satisfy testing requirements in the scheduled time, the JITC will terminate the test. Unless there are extenuating circumstances, the VAN will have to re-apply before testing can continue. The JITC will make the determination for re-application based on observation and/or VAN input. See Appendix B, Failure Definition, for details.

b. Test Scenario

(1) Figure 2 displays the schedule for the required test events. The JITC will initialize the test configuration based on the VAN completed VAN Application Package (VAP) Requirement List (RL) at the beginning of the first day (0800). The remainder of the first two days will be used to verify the test configuration. The first 24 hour test scenario must be started by close of business (1600) on day two. The second 24 hour test scenario must be started by 1200 on day four. Once the second scenario has completed, the JITC will reduce the data and provide the results to the EDI OPS Team.

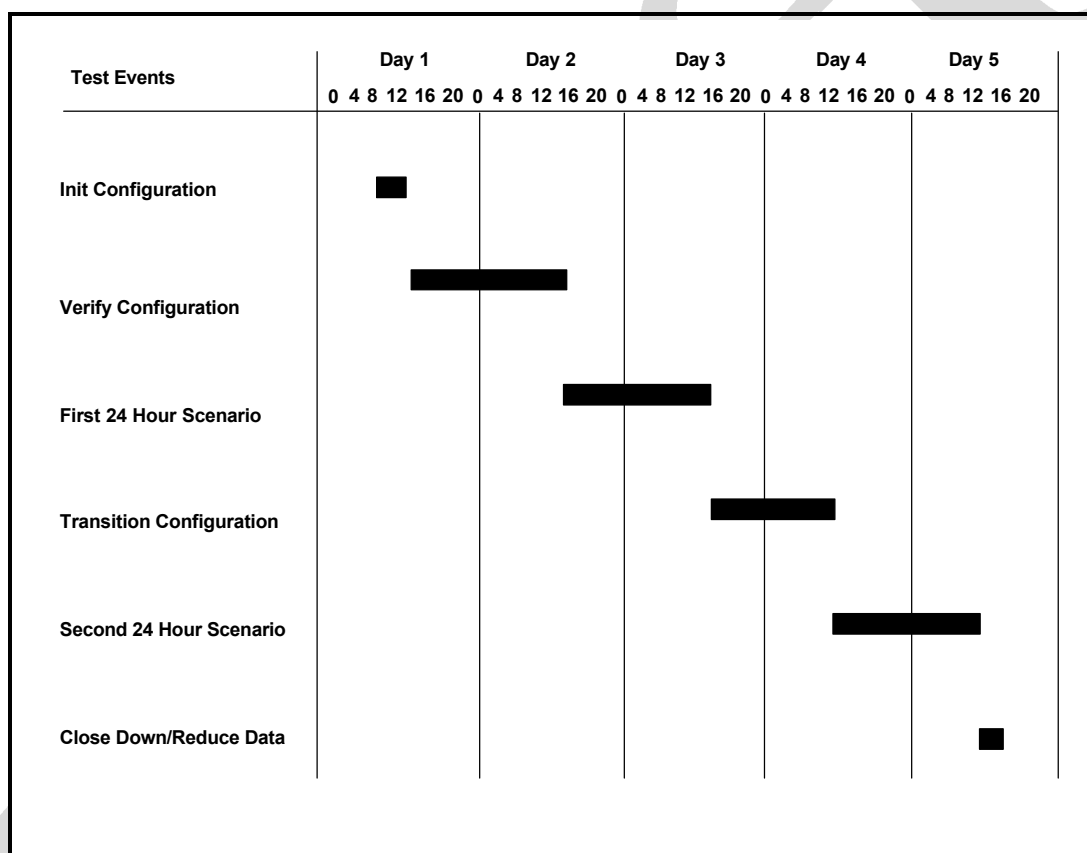


Figure 2 - Test Scenario Schedule

(2) The Government traffic load used during each 24 hours scenario will consist of XXX Transactions Sets. This amount is based on Government EDI traffic statistics for Nov 96. A 50 percent increase is included to address surge workload requirements. This test workload will be used for all tests starting between 1 Jan 97 and 31 Mar 97. The Government will update the Test-ECPN traffic load on 31 Mar 97.

(3) The VAN requirements addressed by this test are only concerned with accountability for Government transactions. The traffic representing operational workloads will be sent in the Government to industry direction. The only Test-TP initiated transactions necessary during testing will be functional acknowledgments (FAs) to one-to-all Government transactions. This is required to verify VAN screening as required in the VLA.

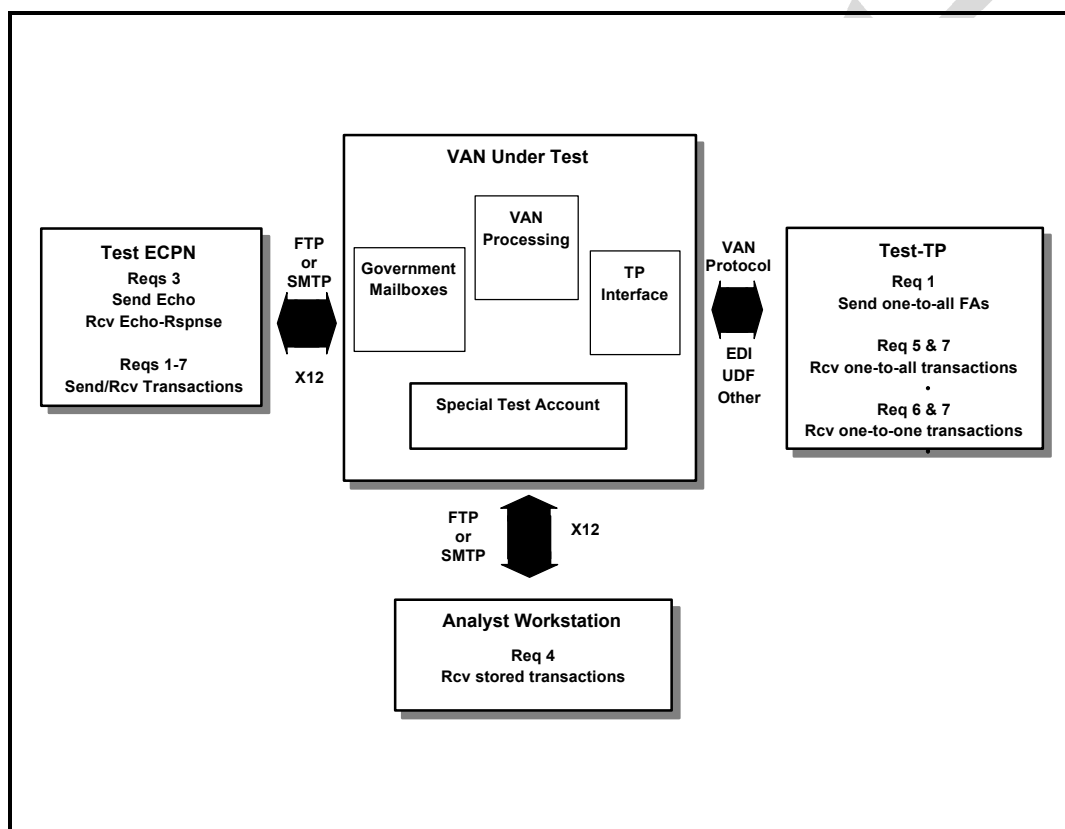
(4) The Test-ECPN scenario will use X12 in accordance with templates furnished by the Government Compliance Certification Facility. Transactions Sets will include one-to-all and one-to-one Requests for Quotes, one-to-one Purchase Orders, one-to-all Award Notices, and one-to-one functional acknowledgments. The Test-TP scenario will use VAN generated traffic or operator actions (e.g., client application). The VAN will provide properly addressed test data files, if applicable, as well as any required software and communications packages before the test.

c. Data Collection

(1) The JITC will maintain a detailed log identifying each significant test activity, the EDI test analyst performing the activity, and the time required to complete the activity. In the event testing is suspended, the JITC will log the reason for the suspension, the date/time when it occurred and the date and time when the testing resumed.

(2) All files passed and all data reported, electronically or manually, will be maintained at the JITC EC/EDI Testing Facility for analysis. Once the VAN has been certified or permanently rejected, JITC will archive the data for a period of twelve months.

I-4 TECHNICAL INTERFACE. As indicated, the JITC will verify traffic loading by a sequence of data transfers between the Test-ECPN, the VAN, and Test-TP. The environment will be representative of ECI operations. The Test-ECPN will use X12 transactions and FTP or SMTP protocols. The Test-TP will use VAN defined formats and protocols as required. An analyst workstation will receive requested data in X12 format using a negotiated protocol available to both the JITC and VAN. The test components, VAN under test, and test data flow are depicted in Figure 3. The requirements supported by each component and the corresponding actions are also identified.

**Figure 3 - Overview of Test Data Flow**

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SECTION II. DETAILS OF TEST

II-1 ISSUES AND CRITERIA. Table 2 identifies the issues and criteria for each test requirement.

Table 2. Test Issues and Criteria

ISSUES	CRITERIA
1 - Does VAN correctly initiate FAs for each Government one-to-all transaction	a. The VAN shall return a single FA, addressed from the VAN, for 100% of Government one-to-all transactions
	b. The VAN shall return a rejection FA with the correct error code for 100% of Government one-to-all transaction containing syntax errors
2 - Does the VAN provide 10 days on-line storage	c. The VAN shall make accessible (special test account) an electronic copy for 100% of JITC requested (by ISA, GS, and ST control numbers) Government transactions
3 - Is the VAN available during normal maintenance hours	d. The Test-ECPN shall successfully login to the VAN for 99% of the attempts executed at 10 minute intervals for the duration of the scenarios
4 - Does the VAN support Pings for ECPN IP Network connectivity checks	e. The VAN will respond to ten ICMP Echo Packets initiated by Test-ECPN with ICMP Echo Reply Packets
	f. The VAN will send ten ICMP Echo Packets to the Test-ECPN and make available (special test account) the ICMP Echo Reply Packet (returned by the Test ECPN)
5 - Does the VAN make available one-to-all Government transactions as they would a TP	g. The VAN shall make accessible to the Test-TP 100% of the Government one-to-all transactions
6 - Does the VAN make available one-to-one Government transactions as they would a TP	h. The VAN shall make accessible to the Test-TP 100% of the Government one-to-one transactions addressed to the Test-TP
7 - Does the VAN make available all Government transactions sets to the TP in a timely manner	i. The VAN shall make accessible to the Test-TP 100% of one-to-all transactions within two hour of the time received from the Test-ECPN
	j. The VAN shall make accessible to the Test-TP 100% of one-to-one transactions within one hour of the time received from the Test-ECPN

II-2 Data Requirements

- a. Functional Acknowledgments**
 - (1) Ten percent sample of one-to-all transaction sets sent from Test-ECPN.
 - (2) All FAs made accessible by the VAN to the Test-ECPN.
 - (3) All FAs (one-to-all) initiated at the Test-TP.
- b. Syntax Error Checks**
 - (1) Twenty one-to-all transaction sets sent from Test-ECPN. Each syntax error will be different for each sample.
 - (2) All FAs made accessible by the VAN to the Test-ECPN.
- c. On-line Storage**
 - (1) Ten randomly selected Government transaction Sets.
 - (2) Copies of all requested government transactions made accessible by VAN to special test account.
- d. Availability.** Results of Test-ECPN Login attempts to the VAN (ten minute intervals).
- e. Echo.** Echo/echo reply results from VAN and Test-ECPN.
- f. Echo Reply.** Same as II-2d.
- g. Government Access (One-to-All)**
 - (1) Ten percent sample of one-to-all transaction sets sent from Test-ECPN.
 - (2) All transactions made accessible to Test-TP.
- h. Government Access (One-to-One)**
 - (1) Ten percent sample of one-to-one transaction sets sent from Test-ECPN.
 - (2) All transactions made accessible to Test-TP.

II-3 Test Procedures

- a.** Upon notification from DISA (JIEO (CFAE), EC/EDI Engineering Management Department) that a VAN Provider has completed the prerequisites required prior to load testing (X12 Compliance), the JITC will contact the VAN Provider point of contact (POC) and set a start date for conducting this portion of the test.
- b.** The JITC will install any required VAN provided software or communications packages before the start date.
- c.** At the start date, the JITC will configure or activate the Test-ECPN VAN channels, any VAN provided software, and the test analyst workstation. Once completed, the JITC will contact the VAN.
- d.** In coordination with the VAN POC, JITC will verify the configuration and primary communications path by sending a single transaction in both directions.
- e.** The JITC will execute the first 24 hour test scenario. Upon conclusion of the scenario, JITC will harvest the collected test data.
- f.** The VAN POC will change to the alternate communications path.
- g.** The VAN POC and JITC test analyst will verify the configuration and alternate communications path by sending a single transaction in both directions.
- h.** The JITC will execute the second 24 hour test scenario. Upon conclusion of the scenario, JITC will harvest the collected test data and initiate data reduction.
- i.** If all requirements are met, the VAN Provider will be notified that the VAN will be turned over to WESTHEM for final integration into the Production ECI. If the applicant cannot meet all of the mandatory requirements, the applicant will be given a list of discrepancies to be resolved. When the provider has resolved all discrepancies the test will be restarted at the next open test date.
- j.** If any anomalies are detected that the VAN Provider will not or cannot resolve within the five day period, JITC will execute a negotiated exit as outlined in Appendix B, Failure Definition.

II-4 Presentation of Results. Results will be presented in a table similar to table 3. A textual description will outline deficiencies found in the RL that were not easily correctable by the VAN Provider.

Table 3. Summary of Test Results

SHORT TITLE	MET	NOT MET	COMMENTS
a. The VAN shall return a single FA, addressed from the VAN, for 100% of Government one-to-all transactions			
b. The VAN shall return a rejection FA with the correct error code for 100% of Government one-to-all transaction containing syntax errors			
c. The VAN shall make accessible (special test account) an electronic copy for 100% of JITC requested (by ISA, GS, and ST control numbers) Government transactions			
d. The Test-ECPN shall successfully login to the VAN for 99% of the attempts executed at 10 minute intervals for the duration of the scenarios			
e. The VAN will respond to ten ICMP Echo Packets initiated by Test-ECPN with ICMP Echo Reply Packets			
f. The VAN will send ten ICMP Echo Packets to the Test-ECPN and make available (special test account) the ICMP Echo Reply Packet (returned by the Test ECPN)			
g. The VAN shall make accessible to the Test-TP 100% of the Government one-to-all transactions			
h. The VAN shall make accessible to the Test-TP 100% of the Government one-to-one transactions addressed to the Test-TP			
i. The VAN shall make accessible to the Test-TP 100% of one-to-all transactions within two hour of the time received from the Test-ECPN			
j. The VAN shall make accessible to the Test-TP 100% of one-to-one transactions within one hour of the time received from the Test-ECPN			

II-5 Analysis and Discussion. For any criteria that were "Not Met", a narrative description will be included and supported by the data collected.

**APPENDIX A
ACRONYMS**

AIS	Automated Information System
ANSI	American National Standards Institute
ASC	American Standards Committee
COOP	Continuity of Operations
DCTF	Defense COOP and Testing Facility
DISA	Defense Information Systems Agency
DoD	Department Of Defense
EC/EDI	Electronic Commerce/Electronic Data Interchange
ECI	Electronic Commerce Infrastructure
ECPN	Electronic Commerce Processing Node
EDI	Electronic Data Interchange
E-Mail	Electronic Mail
FTP	File Transfer Protocol
JITC	Joint Interoperability Test Command
KB	KiloBytes (1024 bytes)
POC	Point of Contact
RL	Requirements List
TP	Trading Partner
VAN	Value Added Network
VAP	VAN Application Package

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APPENDIX B

FAILURE DEFINITION FOR VAN COMMUNICATION LOAD TESTING

B-1 GENERAL. This failure definition is presented to ensure that all VANs tested by the JITC receive equitable treatment. It also provides information to the VAN Provider on the procedures followed when an anomaly occurs during testing.

B-2 SCOPE. These failure definitions apply to the JITC portions of the VAN Certification process - connectivity and load testing.

B-3 FAILURE CONDITION CATEGORIES. There are four categories of failures - three relate to the actual VAN implementation and one is administrative.

a. CRITICAL. The test cannot continue in the VAN's current condition. Basic connectivity between the VAN and Test ECPN protocol does not function.

b. MAJOR. The test can not continue in the VAN's current configuration, but the resolution can be quickly implemented (within 72 hours).

c. MINOR. The test can continue with a procedural change or the procedure needs to be reinitialized due to operator error or an outside error such as power failure.

d. ADMINISTRATIVE. The test can not continue due to lack of qualified personnel at VAN provider site. The test will be suspended for up to 72 hours. After the 72 hours has elapsed the VAN will be disconnected from the ECPN and sent to the bottom of the test queue.

Note: It is the VAN Provider's responsibility to ensure that the required support for testing will be on-hand during the scheduled test period.

B-4 FAILURE CRITERIA

- a. CRITICAL -** Shall require a negotiated exit from testing
- (1) Any mandatory function that prevents the ECPN from interconnecting with the VAN using FTP or manipulating files via E-Mail.
 - (2) Non-compliance with protocol standards applicable to selected capabilities in the RL.

b. MAJOR - May result in test suspension

- (1) Hardware failure that can be repaired within the 72 hour criteria.
- (2) Not available to ECPN for processing data at the required times.

c. MINOR - May result in test suspension

- (1) Improper actions by the VAN operator that results in a failure caused by procedure not by hardware or software actions.
- (2) A hardware failure that can be cleared within 30 minutes.
- (3) Other outside causes such as power outages, acts of nature, etc.
- (4) Failure to report all VAN/ECI problems to the JITC EDI specialist.

B-5 SUSPENSION. The VAN will be given a maximum of 72 consecutive hours to resolve the problem prior to being disconnected from the ECPN and dropped to the end of the test queue. Included in that time will be up to eight hours of consultation and test support with the JITC to aid in the resolution of the problem. If the problem can not be resolved with the 72 hour window, the status changes to Critical and will proceed to the Negotiated Exit.

B-6 NEGOTIATED EXIT

a. During the load test, a negotiated exit is a point in time when the JITC EDI test analyst and the VAN Provider decide together that test results up to that point do not justify continuing the assessment process. The request for a negotiated exit can be made by either party.

b. If a negotiated exit is taken as consequence of a dispute over the results of specific test cases, then the negotiated exit takes place before the assignment of verdict to the disputed test case.

c. If a negotiated exit is agreed to by both the JITC EDI test analyst and the VAN Provider, the JITC test analyst shall make available to the VAN Provider, on request, documentation containing all the information recorded during the assessment process.

d. In addition, the JITC EDI test analyst shall provide an informal test report which does not assume the status of the Test Report submitted at the end of test. It shall

be considered simply as guidance to the VAN Provider on the results of the testing undertaken. This informal test report shall indicate the reasons why a negotiated exit was taken.

e. After a negotiated exit, testing shall not be restarted except by starting a new test campaign using the same documentation or by initiating a new assessment process if the documentation had to be changed as part of the fix.

Note: A suspension of testing as described in paragraph 4 may be used prior to the negotiated exit. Especially if the resolution of the problem appears to be an easy fix.

B-7 TESTING POSITION. A negotiated exit shall cause the VAN to be placed at the end of the priority list for VAN applicant testing as of the date the exit was negotiated.

B-8 SUMMARY. These rules and conditions have been put in place to give all applicant VAN Providers the same opportunity to have their product tested. Like all rules there are some gray areas that can be negotiated. The final determination rests with the JITC Government VAN load testing POC.

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APPENDIX C DATA COLLECTION WORKSHEETS

C-1 Attached are the worksheets used to maintain certain data recorded during the test.

- a. HOURLY USE OF DATA STORAGE ON VAN
- b. INCREMENT OF LOAD DATA
- c. DOWNTIME STATUS OF VAN
- d. RESULTS OF ICMP ECHOs
- e. VAN PROCESSING TIME
- f. FTP NETWORK THROUGHPUT RATE
- g. NUMBER OF MESSAGES TRANSFERRED PER HOUR
- h. TIME SHEET FOR PERSONNEL INVOLVED IN TEST

C-2 All data will be maintained for a period of twelve months along with the electronic data captured during the test and downloaded from the test instrumentation at the end of testing.

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